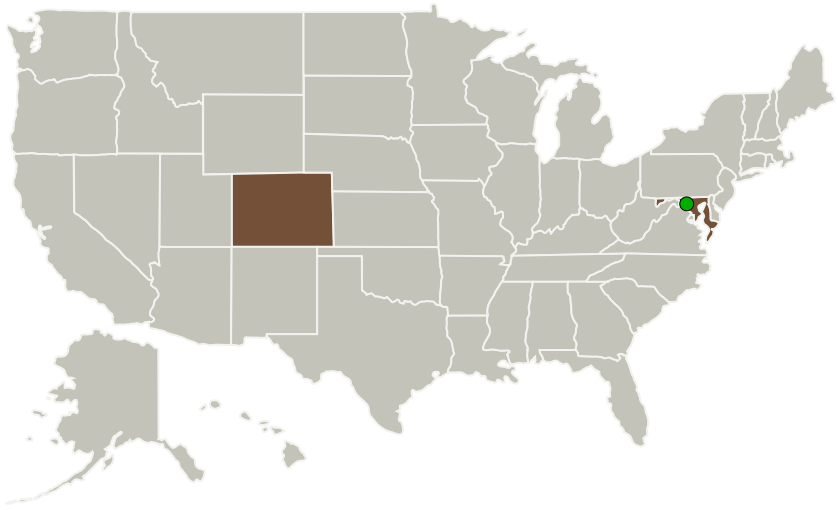
1.5-Micron Amplifier for High-Average Power, Phase I

Completed Technology Project (2016 - 2016)

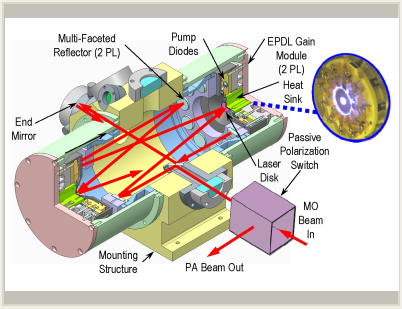
Project Introduction

Aqwest proposes to develop a novel, compact and rugged high-peak power erbium (Er) laser amplifier at 1.5 m to for NASA remote sensing trasmitter. The project will take advantage our novel and highly successful edge-pumped disk laser (EPDL) multi-passed amplifier we are developing for the US Army, Navy, and the Department of Energy (DOE) applications. In Phase I, we will use our existing suite of models to determine the feasibility of a 1.5- m EPDL-based laser amplifier and identify preferred operating regimes. We will test our existing Er:glass laser disk in our existing EPDL test bed to further calibrate/anchor our models over the wavelength range of interest, especially at around 1.547 m. Using this information, we will design and fabricate a new laser disk with optimized Er doping and improved waste heat handling capability for the targeted operating regime, and test its performance under relevant conditions, and confirm the models. In Phase II, we will design, fabricate, test, and deliver a prototype 1.5- m EPDL laser amplifier.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
Aqwest, LLC	Lead Organization	Industry	Larkspur, Colorado
Goddard Space Flight Center(GSFC)	Supporting Organization	NASA Center	Greenbelt, Maryland



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Completed Technology Project (2016 - 2016)

Primary U.S. Work Locations	
Colorado	Maryland

Project Transitions

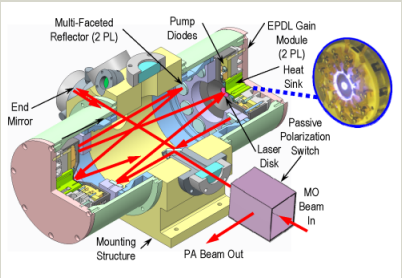
June 2016: Project Start

December 2016: Closed out

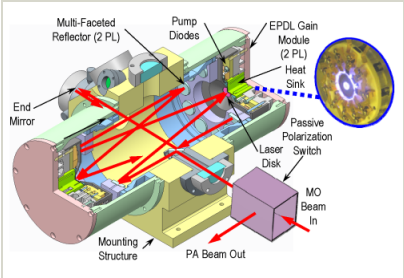
Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/140403)*

Images



Briefing Chart Image
1.5-Micron Amplifier for High-Average Power, Phase I *(https://techport.nasa.gov/image/126717)*



Final Summary Chart Image
1.5-Micron Amplifier for High-Average Power, Phase I Project Image *(https://techport.nasa.gov/image/126976)*

Organizational Responsibility

Responsible Mission Directorate:
Space Technology Mission Directorate (STMD)

Lead Organization:
Aqwest, LLC

Responsible Program:
Small Business Innovation Research/Small Business Tech Transfer

Project Management

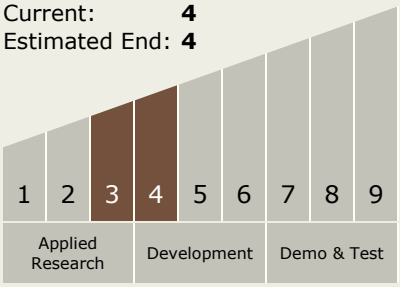
Program Director:
Jason L Kessler

Program Manager:
Carlos Torrez

Principal Investigator:
John Vetrovec

Technology Maturity (TRL)

Start: **3**
Current: **4**
Estimated End: **4**



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Completed Technology Project (2016 - 2016)

Technology Areas

Primary:

- TX08 Sensors and Instruments
  - TX08.1 Remote Sensing Instruments/Sensors
    - TX08.1.5 Lasers

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System